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(54) **STEERING WHEEL ROD WITH SLIDING AND TILTING MOVEMENTS.**

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Description

The present invention relates to a steering wheel rod support for vehicles, which is designed in such a way that it can be displaced a distance in the longitudinal direction of the steering wheel rod, and that it can also can be tilted about a tranverse axis, and which comprises fastening means, e.g. a stationary, stable box, by means of which the entire steering wheel rod support can be mounted in the vechicle, a bearing housing for the steering wheel rod, lock plates fastened in the bearing housing, lock means, which cooperate with the lock plates, and which are designed for locking the steering wheel rod support in an adjusted position, as well as actuation means for the lock means.

Such steering wheel rod supports have to meet many different requirements, which individually can be solved in different ways, but these solutions can be difficult to combine in the same steering wheel rod support. Besides the general requirement that a devic of this type has to be simple and inexpensive to manufacture and mount in vehicles, the following illustrative requirements can be mentioned:

- The steering wheel rod support must be stable and be able to resist all the stresses, which may materialize, without being damaged;
- No plays whatsoever must be present;
- Sliding and tilting movements must not seem flabby or sluggish and no other movements than the required movements must be possible;
- The devices, which accomplish the sliding and tilting possibilities, must be placed in such a way, that they do not obstruct or interrupt other functions in the vehicle;
- The lock devices for the sliding and tilting movements must be safe and efficient in order not to allow any unintentional readjustments;
- The lock devices for the sliding and tilting movements must be easily accessible and easy to actuate; and
- The pivoting spindle for the tilting function must be located comparatively close to the steering wheel in order to give the steering wheel a pronounced angular change when a tilting takes place, etc.

Many different constructions of slideable and tiltable steering wheel rod supports are known, all of which are burdened with deficiences or inconveniences in some respects.

E.g. the French patent with publication number 2.360. 454 (Chrysler France) relates to a slidable and tiltable steering wheel rod support, in which the tilting spindle is located at a comparatively large distance from the steering wheel, which results in that the steering wheel, when a tilting is done, assumes a very small angular change, depending on the long pivoting radius between the steering wheel and the tilting spindle. Also, the lock blades, which necessarily are somewhat resilient in order to obstruct the sliding and tilting movement, form mounting and suspension means for the entire steering wheel rod support in the car, which means that the support will be resilient and somewhat instable and can be experienced as unstable and resilient. Also, it may be difficult to carefully steer the sliding and tilting movements, and it is difficult and heavy to actuate the lock devices of the slidable and tiltable steering wheel rod support and the required stable locking action is normally not obtained, and the steering wheel rod support jointly with the steering wheel might unintentionally readjust while driving.

German document 17 80 061, laid open to public inspection (Daimler Benz), relates to a steering wheel rod support, which mainly has the same inconveniences as the known construction discussed above.

The purpose of the present invention is to solve the problem of producing a steering wheel rod support, which is not burdened with the deficiences of the already known constructions and which fulfills the considerable requirements stated above for a steering wheel rod support having a sliding and tilting function.

EP-A-0121506 discloses a steering wheel rod support of the type initially mentioned in which the lock plates are actuated by means of two cooperating wedge members which are sping biassed and which are designed to press the lock plates against the stationary support sides to provide a friction locking engagement between the lock plates and the support sides and thereby between the steering wheel and the stationary support. Since the lock plates have to be pressed very strongly to the support sides in order to avoid the risque of unintentional readjustment of the steering wheel, for instance even in case the driver lifts himself in the steering wheel when entering the car, it is necessary that the actuation springs of the wedge means exert a very strong spring action. As a consequence it may be difficult to release the wedge means when steering wheel is to be repositioned. Still it may happen that the steering wheel is unintentionally repositioned upon applying a strong force to the steering wheel. It also may happen that the wedge means, by time, become very strongly friction clamped to each other thereby making it still more difficult to release the wedge means. It therefore has been an object of the invention to avoid the use of friction surfaces in the locking means for the lock plates and the support sides.

In accordance with the present invention the lock means for the lock plates comprises two sleeve shaped cylindrical members slidably retained by a lock bolt and arranged to press the lock plates against the sides of the box in order to give a friction locking between said lock plates and the sides of the box. The cylindrical locking members are formed with sharp, elongated end points facing each other and arranged on oppsite sides of the longitudinal axis of the retainer bolt, and the actuation means for the lock means is a force-actuated, longitudinal lever, which functions as a double-armed lever arm engaging the respective wedge-shaped end points of the cylindrical lock members.

The bearing housing, jointly with the steering wheel rod, is, by means of sliding grooves or the like in the fastening means and in the friction blades, mounted in such a way, in the fastening device, that partly it can be displaced in a longitudinal direction and partly be tilted into any adjusted longitudinal position whatsoever about a tilting link, which is located comparatively close to the steering wheel.

Through this constructive design the following advantages are obtained:

- Lateral forces and torsional moments are transmitted from the bearing housing to the fastening means or the box via said tilting link, consequently only insignificantly via the lock blades. In this way the steering wheel rod will obtain a very good stability and freedom of play, when the mechanism is locked as well as when sliding and tilting adjustments are performed and the mechanism is open;
- Said tilting link can be located at a high level and close to the steering wheel, and yet no parts of the steering wheel rod support will have to be moved upwards towards the steering wheel;
- The lock devices can be located at a large distance from the tilting link of the bearing housing, the lock devices in this way fanctioning with a large lever arm; and
- The lock devices can, in a simple way, be designed as a double-armed lever arm, which actuates two lock pistons, which actuate said blades and fastening devices, having a large lever arm and with a very minor friction.

The present invention will now be described in more detail, reference being made to the accompanying drawings, which show two exemplifying embodiments of the steering wheel rod support according to the invention. The shown and described embodiments are of course not limiting, but several variations and modifications are possible within the scope as defined by the attached patent claims.

In the drawings Figure 1 shows in fragments one embodiment of a steering wheel rod support according to the invention, seen obliquely from above and in a lateral view. Figure 2 shows the same device, seen from above and from the front, and Figure 3 shows this device in a lateral view. Figure 4 shows an alternative embodiment of the invention, seen in a perspective view, obliquely from below. Figure 5 shows the device in Figure 4 seen from that end which faces the steering wheel, and Figure 6 shows the same device in a lateral view.

The steering wheel rod support, shown in fragments in Figures 1, 2 and 3, generally comprises stationarily mounted or mountable fastening means 1, which is called a box, a bearing housing 2 for the steering wheel rod, elongated lock plates 3, which are fastened to bearing housing 2 and projected from the same, lock means 4, fastened to the outer ends of said lock plates, and actuation means 5 for said lock means.

The stationary or stationarily mounted box can be designed as a turned U-shaped bracket having webs and legs, but it is shown in Figures 1-3 designed as two separate L-shaped angle bars, foot 6 on the bar being designed to be screwed or in another way fastened to the bottom side of some supporting part of the vehicle, and bar 7 of said L-bar forms mounting bars for the active parts of the steering wheel bar support. For this reason each mounting bar 7 is designed with two elongated slots 8 and 9, clearly shown in Figures 1 and 3, which slots in this case extend at somewhat different levels in the bar and overlap each other. On the exterior side said slots are connected to V-shaped sliding grooves 10 and 11 respectively, which are designed to cooperate with friction reducing sliding bodies 12.

Bearing housing 2 forms a solid blade support 13, in which a steering wheel rod tube 14 is fastened. A steering wheel rod 15 extends through wheel rod tube 14 and through blade support 13 and is rotatably but axially non-movably mounted, in a way known per se, in said parts. In its upper part wheel rod 15 is provided with splines 16 in order to attach a steering wheel and in its lower end it is provided with splines 17 in order to attach a universal joint (not shown) and other means designed to transmit the steering wheel movements to the steering system of the vehicle.

On each side of blade support 13 lock plates 3 are fastened, which project in the longitudinal direction of the device a small distance from said blade support. In the case shown there are two lock blades on each side, and in a few places spacers, e.g. washers, are mounted between said plates. Adjacent to its outer ends lock plates 3 are

provided with arched slots 18, designed to tilt said wheel rod support about a spindle 19, which extends through bearing housing 13 and through one of said longitudinal slots 8 in said mounting bars 7. Bearing body 13, with its lock plates 3, is designed to be, by means of spindle 19, fastened, having a slight slip fit, between mounting bars 7, facilitated by sliding bodies 12, and outer nuts.

In order to lock the mechanism there are provided two sleeve-shaped cylindrical members 20 and 21, which are retained by a bolt 22, which extends through said cylindrical members 20,21, through lock plates 3 and through mounting bars 7 and are locked on the exterior side of the latter by means of sliding bodies 12 and nuts. Said pistons are provided with wedge-shaped points 23,24, which in the shown case are directed essentially in a vertical direction, and said points are placed somewhat eccentrically on each side of the center of said pistons, in order to function as working surfaces for a flat lever, by means of which cylindrical members 20 and 21 can be pressed apart. The pistons are freely displaceable on bolt 22 and abut, each one with a plane surface, the respective plate package 3.

Actuation means 5 for the cylindrical members 20 and 21 comprises an actuation lever 25, functioning as a lever arm, which in its outer end is designed to cooperate with wedge-surfaces 23,24 of said pistons and which with its opposite end is attached to a hydraulical, pneumatic or electric power motor 26 having a connection 27 for a pressure medium or electric current. Lever 25 is by means of motor 26 spring-loaded in a locking direction, said lever in an unactuated condition pressing the cylindrical members 20 and 21 apart and in this way locking blades 3 against mounting bars 7. Motor 26 can for this purpose be designed with an interior spring, the spring power of which is sufficient to keep said steering wheel rod support locked. In order to disengage the mechanism the power of the spring must be overcome by being actuated by motor 26, lever 25 unloading the cylindrical members 20,21, thus disengaging lock plates 3 from mounting bars 7 of the box. Then the steering wheel rod support can be displaced longitudinally in slots 8 and 9 and simultaneously be tilted in slots 18 in blades 3 about spindle 19 through bearing housing 2.

The embodiment according to Figures 4-6 is only different as to details from the embodiment described above. It is clearly shown in Figure 5, that stationary box 1 in this embodiment mainly is turned U-shaped, web 6' being designed to be screwed or in another way fastened stationarily to the vehicle. On the interior side of each one of sides 7' of box 1 longitudinal guide rails 28 are provided in order to longitudinally guide a central intermediary portion 29 in the device. In one place each one of sides 7' of the box is designed with longitudinal slots 9, in which through lock bolt 22 for lock plates 3 is displaceable.

Central intermediary portion 29 forms a continuous body, which with its upper part extends into bearing housing 2' and is mounted about a transverse spindle 19', above which bearing housing 2' and its lock plates 3 and consequently also the steering wheel rod and its steering wheel can be tilted or pivoted in a vertical plane. In a lower portion intermediate portion 29 is designed with a piston guide 30, in which cylindrical members 20 ,21 are guided. The cylindrical members 20,21 are also in this embodiment designed with actuation edges, which make lever 25 function as a double-armed lever arm during a pivoting while being actuated by prestressing pistons 31. Motor 26 retracts the corresponding end of lever 25 and consequently a release of the cylindrical members 20,21 and a detachment of lock plates 3, it being possible to displace bearing housing 2' together with the steering wheel rod and the lock plates longitudinally through a sliding in slot 9' as well as to pivot them in slots 18 about pivot spindle 19'.

About the same axis as tilting spindle 19' a merely fragmentarily shown joint coupling of steering wheel rod 15 can be pivoted. Steering wheel rod 15 is axially fastened in bearing housing 2', but it can be displaced axially jointly with blade support 13, lock blades 3 and central intermediary portion 29.

The two sets of lock plates 3, fastened in blade support 13, abut interior sides 7' of box 1 and are pressed against the same by means of the spring-actuated cylindrical members 20, 21. The distance between tilting spindle 19' and the steering wheel is so small, that a substantial angular change of the steering wheel is obtained, when there is a tilting up or down about spindle 19', the arched blade slots 18 being used as limits. At the same time the distance between tilting spindle 19' and the arched slots 18 in the lock plates is sufficiently large to allow such a moment arm, that no particularly large forces are needed to lock lock plates 3 against sides 7' of the box in order to prevent an unintentional tilting of the steering wheel. Consequently, in many instances it may be sufficient to use just one lock blade on each side of the box. If required, the number of lock blades can of course be doubled or multiplied and the interior side of the box be designed with a correspondingly larger number of interaction surfaces, which can be interleaved with the lock blades in order to increase the number of friction surfaces between the blades and the box. Plain washers about lock bolt 22 can, when placed between double lock blades, function as additional friction surfaces in order to increas the tilting

locking.

In order to prevent the steering wheel from suddenly falling downwards, when lever 25 is actuated and lock blades 3 are disengaged from the stationary box, there are provided two detent springs 32 on the lower side between central intermediary portion 29 and blade support 13. Said springs are only designed, when the lock blades are disengaged, to counteract, but not prevent, a tilting down of the steering wheel and to facilitate a tilting up of the steering wheel.

The two described devices function, when the steering wheel position is to be adjusted, in such a way, that lever 25 is actuated, manually or by means of the shown motor 26, it being possible to partly displace blade support 13 and its lock blades 3, steering wheel rod and the steering wheel, while steering, in the longitudinal direction of box 1 by means of making lock bolt 22 and spindle 19 and lock bolt 22 and central intermediary portion 29 respectively slide in longitudinal slots 8,9 and 8',9' respectively and to partly tilt them in a vertical plane by means of pivoting blade support 13 about the transverse tilting spindle 19 and 19' respectively and pivoting blades 3 in relation to sides 7 and 7' respectively of the box and lock bolt 22, in cooperation with arched slots 18 in the blades. When the desired length and tilting position has been reached, motor 26 will be deactivated and lever 25 will press, actuated by its prestressing springs, the cylindrical members 20,21 outwards from each other, blades 3 then being locked against sides 7 and 7' respectively of the box between the cylindrical members 20 and 21 and lock bolt 22, and the steering wheel has in this way reached a most stable position without any play.

Lock blades can of course in an alternative embodiment be placed on the exterior sides of the box, it being possible, provided box 1 is designed and the fastening in the vehicle is done in a particular way, to pivot the steering wheel upwards as well as downwards a considerable distance. In order to lock the mechanism lever 25, with its prestressing springs, then has to be designed with a reversed function as compared to what has been described above. Also, lock bolt 22 must in this way be designed in two parts and lever 25 be designed to, when a locking is to be attained, pull the two lock bolt parts against each other and consequently lock blades 3 against box sides 7 and 7' respectively.

Reference numerals

1	fastening means, box
2	bearing housing
3	lock plates
4	lock means
5	actuation means (for 4)
6	foot (on 1)
7	mounting bar (on 1)
8	slot (in 7)
9	slot (in 7)
10	V-groove (in 7)
11	V-groove (in 7)
12	sliding body
13	blade support
14	steering wheel rod tube
15	steering wheel rod
16	splines (in 15)
17	splines (in 15)
18	arched slot (in 3)
19	spindle (axis)
20	cylindrical member
21	cylindrical member
22	bolt
23	point (of 20)
24	point (of 21)
25	lever
26	motor
27	connection
28	guide rail
29	intermediate portion
30	piston guide
31	springs
32	detent springs

Claims

1. A steering wheel rod support for vehicles, which is designed in such a way that it can be displaced a distance in the longitudinal direction of the steering wheel rod (15), and that it can also can be tilted about a tranverse axis (19;19'), and which comprises fastening means (1), e.g. a stationary, stable box, by means of which the entire steering wheel rod support can be mounted in the vechicle, a bearing housing (2; 2') for the steering wheel rod (15), lock plates (3) fastened in the bearing housing (2; 2'), lock means (4), which cooperate with the lock plates, and which are designed for locking the steering wheel rod support in an adjusted position, as well as actuation means (5) for the lock means (4), **characterized**

in that said lock means (4) for the lock plates (3) comprises two sleeve shaped cylindrical members (20, 21) slidably retained by a lock bolt (22) and arranged to press the lock plates (3) against the sides (7; 7') of the box (1) in order to obtain a friction locking between said lock plates (3) and the sides (7, 7') of the box (1),

in that said cylindrical locking members (20, 21) are formed with elongated sharp ends (23, 24 resp.) facing each other and arranged

on opposite sides of the longitudinal axis of the retainer bolt (22),

and in that the actuation means (5) for the lock means (4) is a force-actuated (26), longitudinal lever (25), which functions as a double-armed lever arm engaging the respective enlongated sharp ends (23, 24 resp.) of the cylindrical lock members (20, 21).

2. A steering wheel rod support according to claim 1, **characterized** in that said lock plates (3) are fastened to the bearing housing (2; 2'), and in that the lock plates (3), adjacent to their outer ends, are formed with arched slots (18), through which the lock bolt (22) extends, and which allow a tilting of bearing housing (2; 2') together with the steering wheel rod (15) and the steering wheel a certain distance upwards and downwards respectively about the tilting axis (19; 19') of the bearing housing (2; 2').

3. A steering wheel rod support according to claim 1 or 2, in which the lock plates (3) being placed on the interior sides (7; 7') of the box (1), **characterized** in that the transverse cylindrical lock members (20, 21) are arranged for being actuated in a direction away from each oth r by the lever arm (25) in order to obtain a locking of the lock plates (3) against the sides (7; 7') of the box.

4. A steering wheel rod support according to claim 3, **characterized** in that the stationary box (1) is formed with two sets of longitudinal slots (8, 9) or guide rails (8', 9), in which the bearing housing (2, 2') or a part attached to the same can be displaced forwards and backwards, and in that the the force actuation means (26) for the lever arm (25) is arranged, in the normal non-actuated condition, to press the cylindrical lock members (20, 21) apart, retained by the lock bolt (22) extending through the arched slots (18) of the lock plates (3) and through a first set (9) of the guide rails of the box (1), to thereby press the lock plates (3) into locking engagement with each other and with the sides (7; 7') of the box (1).

5. A steering wheel rod support according to claims 1 and 2, in which the lock plates (3) being placed on the exterior sides (7; 7') of the box (1), **characterized** in that the lock bolt (22) for the lock plates (3) is split in that the cylindrical lock members (20, 21) as well as the two lock bolt parts are designed to be pressed against each other in order to obtain a locking of the plates (3) against the sides (7) of the box by means of a pulling, force actuated lever.

6. A steering wheel rod support according to any of the preceding claims, **characterized** in that it comprises two sets of a plurality of cooperating lock plates (3) each having an elongated tilt slot (18), and between each pair of said cooperating lock plates (3) a washer mounted on the lock bolt (22).

7. A steering wheel rod support according to claim 1, **characterized** in that the lever arm (25) engaging said two elongated sharp ends (23, 24) has a flat cross section,

8. A steering wheel rod support according to any of the preceding claims, **characterized** in that the end bearing housing (2'), with its lock plates (3), at the end thereof facing the steering wheel, is pivotally connected (19',) to a central intermediate portion (29), which can be longitudinally displaced in guide rails (28), disposed on the interior slides (7') of the box (1), and in that the bearing housing (2'), with its lock plates (3), can be locked against being longitudinally displaced as well as being tilted over the lock bolt (22), which extends through the lock plates (3) and the cylindrical lock members(20, 21). (Figures 4-6)

9. A steering wheel rod support according to claim 8, **characterized** in that there is one or more detent springs (32) between the central intermediate portion (29) and the bearing housing (2'), which detemt springs (32) are placed on a level below the tilting spindle (19') and designed to prevent the steering wheel from dipping down, when the locking between the lock plates (3) and the box (1) is released.

Patentansprüche

1. Lenksäulenträger für Fahrzeuge, der eine Strecke in Längsrichtung der Längssäule (15) verschiebbar und außerdem um eine Querachse (19; 19') kippbar ist und der folgende Merkmale aufweist: eine Befestigungsmittel (1) z. B. einen stationären, stabilen Kasten, mit denen der gesamte Lenksäulenträger im Fahrzeug montiert werden kann; ein Lagergehäuse (2; 2') für die Lenksäule (15); Riegelplatten (3), die im Lagergehäuse (2; 2') befestigt sind ; Riegelmittel (4), die mit den Lagerplatten zusammenwirken und dazu dienen, den Lenksäulenträger in eingestellter Position zu verriegeln; und Betätigungsmittel (5) für die Riegelmittel (4),

dadurch gekennzeichnet,

daß die Riegeleinrichtung (4) für die Rie-

gelplatten (3) zwei hülsenförmige zylindrische Elemente (20, 21) aufweist, die verschieblich von einem Riegelbolzen (22) gehalten werden und dazu dienen, die Riegelplatten gegen die Seiten (7;7') des Kastens (1) zu drücken, um eine reibschlüssige Verriegelung zwischen den Riegelplatten (3) und den Seiten (7; 7') des Kastens (1) zu erzielen,

daß die zylindrischen Riegelelemente (20, 21) mit langgestreckten, scharfen Enden (23 bzw. 24), die gegeneinander gerichtet sind, ausgebildet sowie auf entgegengesetzten Seiten der Längsachse des Haltebolzens (22) angeordnet sind, und

daß die Betätigungseinrichtung (5) für die Riegeleinrichung (4) ein kraftbetätigter (26), längsgerichteter Hebel (25) ist, der als zweiarmiger Hebel wirkt, welcher an den jeweiligen langgestreckten, scharfen Enden (23 bzw. 24) der zylindrischen Riegelelemente (20, 21) angreift.

2. Lenksäulenträger nach Anspruch 1, dadurch gekennzeichnet, daß die Riegelplatten (3) am Lagergehäuse (2; 2') befestigt sind und daß die Riegelplatten (3) nahe ihren äußeren Enden mit bogenförmigen Schlitzen (18) ausgebildet sind, durch die sich der Riegelbolzen (22) erstreckt und die ein Kippen des Lagergehäuses (2; 2') zusammen mit der Lenksäule (15) und dem Lenkrad um eine bestimmte Strecke aufwärts bzw. abwärts um die Kippachse (19; 19') des Lagergehäuses (2; 2') zuläßt.

3. Lenksäulenträger nach Anspruch 1 oder 2, bei dem die Riegelplatten (3) auf den Innenseiten (7; 7') des Kastens (1) angeordnet sind, dadurch gekennzeichnet, daß die quergerichteten, zylindrischen Riegelelemente (20, 21) durch den Hebelarm (25) in einer Richtung fort voneinander betätigbar sind, um eine Verriegelung der Riegelplatten (3) gegen die Seiten (7; 7') des Kastens zu erzielen.

4. Lenksäulenträger nach Anspruch 3, dadurch gekennzeichnet, daß der stationäre Kasten (1) mit zwei Sätzen von längsgerichteten Schlitzen (8, 9) oder Führungsschienen (8', 9) ausgebildet ist, in denen das Lagergehäuse (2, 2') oder ein an diesem befestigtes Teil vorwärts und rückwärts verschiebbar ist, und daß die Kraftbetätigungseinrichtung (26) für den Hebelarm (25) in normalem, nicht-betätigtem Zustand die zylindrischen Riegelelemente (20, 21), die von dem durch die bogenförmigen Schlitze (18) der Riegelplatten (3) und durch einen ersten Satz (9) der Führungsschienen des Kastens (1) hindurchgehenden Riegelbolzen (22) gehalten werden, auseinanderdrückt, um dadurch die Riegelplatten (3) in einen Verriegelungseingriff miteinander und mit den Seiten (7; 7') des Kastens (1) zu drücken.

5. Lenksäulenträger nach Anspruch 1 und 2, bei dem die Riegelplatten (3) auf den Außenseiten (7; 7') des Kastens (1) angeordnet sind, dadurch gekennzeichnet, daß der Riegelbolzen (22) für die Riegelplatten (3) geteilt ist und daß die zylindrischen Riegelelemente (20, 21) sowie die beiden Riegelbolzenteile gegeneinander gedrückt werden, um mittels eines ziehenden, kraftbetätigten Hebels eine Verriegelung der Platten (3) gegen die Seiten (7) des Kastens zu erzielen.

6. Lenksäulenträger nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß er zwei Sätze einer Mehrzahl von zusammenwirkenden Riegelplatten (3) umfaßt, von denen jede einen langgestreckten Kippschlitz (18) aufweist, wobei zwischen jedem Paar von zusammenwirkenden Riegelplatten (3) eine Scheibe auf dem Riegelbolzen (22) angeordnet ist.

7. Lenksäulenträger nach Anspruch 1, dadurch gekennzeichnet, daß der Hebelarm (25), der an den zwei langgestreckten, scharfen Enden (23, 24) angreift, einen flachen Querschnitt besitzt.

8. Lenksäulenträger nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß das am Ende liegende Lagergehäuse (2') mit seinen Riegelplatten (3) an deren gegen das Lenkrad gerichtetem Ende an ein zentrales Zwischenteil (29) angeschlossen ist, welches in Längsrichtung in Führungsschienen (28) verschieblich ist, die auf den Innenseiten (7') des Kastens (1) angeordnet sind, und daß das Lagergehäuse (2') mit seinen Riegelplatten (3) gegen eine Verschiebung in Längsrichtung sowie ein Kippen über den Riegelbolzen (22), der sich durch die Riegelplatten (3) und die zylindrischen Riegelelemente (20, 21) hindurch erstreckt, verriegelbar ist. (Fig. 4-6)

9. Längssäulenträger nach Anspruch 8, dadurch gekennzeichnet, daß zwischen dem zentralen Zwischenteil (29) und dem Lagergehäuse (2') eine oder mehrere Arretierfed rn (32) angeordnet sind, wobei die Arretierfedern (32) auf einer Höhe unterhalb der Schwenkachse (19') sitzen und das Lenkrad am Herunterkippen hindern, wenn die Verriegelung zwischen den Riegelplatten (3) und dem Kasten (1) aufgehoben wird.

Revendications

1. Support de colonne de volant de direction pour véhicules, qui est conçu de manière qu'il puisse être déplacé sur une certaine distance dans la direction longitudinale de la colonne de volant de direction (15) et qu'il puisse aussi subir un pivotement autour d'un axe transversal (19 ; 19'), ledit support comprenant un moyen de fixation (1), par exemple une boîte stable stationnaire, au moyen duquel l'ensemble du support de colonne de volant de direction peut être monté dans le véhicule, un boîtier porteur (2 ; 2') pour la colonne (15) de volant de direction, des plaques de blocage (3) fixées dans le boîtier porteur (2 ; 2'), des moyens de blocage (4) qui coopèrent avec les plaques de blocage et qui sont destinés à bloquer le support de colonne de volant de direction à une position réglée, ainsi qu'un moyen (5) d'actionnement des moyens de blocage (4),

   caractérisé en ce que lesdits moyens (4) de blocage des plaques de blocage (3) comprennent deux éléments cylindriques (20, 21) en forme de manchons montés et retenus coulissants au moyen d'un boulon de blocage (22) et disposés de manière à serrer les plaques de blocage (3) contre les côtés (7 ; 7') de la boîte (1) afin d'obtenir un blocage par frottement entre lesdites plaques de blocage (3) et les côtés (7, 7') de la boîte (1),

   en ce que lesdits éléments cylindriques de blocage (20, 21) comportent des extrémités allongées et effilées (23, 24, respectivement) qui sont en face l'une de l'autre et disposées sur des côtés opposés de l'axe longitudinal du boulon de retenue (22),

   et en ce que le moyen (5) d'actionnement des moyens de blocage (4) est un levier longitudinal (25) actionné par une force (26) et fonctionnant en bras de levier à deux bras qui s'applique contre les extrémités allongées effilées respectives (23, 24, respectivement) des éléments cylindriques de blocage (20, 21).

2. Support de colonne de volant de direction selon la revendication 1, caractérisé en ce que lesdites plaques de blocage (3) sont fixées au boîtier porteur (2 ; 2'), et en ce que les plaques de blocage (3) comportent à proximité de leurs extrémités extérieures des boutonnières courbes (18) par lesquelles passe le boulon de blocage (22) et qui permettent un pivotement du boîtier porteur (2 ; 2') avec la colonne (15) de volant de direction et avec le volant de direction sur une certaine distance vers le haut et vers le bas, respectivement, autour de l'axe de pivotement (19 ; 19') du boitier porteur (2 ; 2').

3. Support de colonne de volant de direction selon la revendication 1 ou 2, dans lequel les plaques de blocage (3) sont placées sur les côtés intérieurs (7 ; 7') de la boîte (1), caractérisé en ce que les éléments cylindriques transversaux de blocage (20, 21) sont disposés de manière à être actionnés dans une direction qui les écarte l'un de l'autre par le bras de levier (25) afin d'obtenir un blocage des plaques de blocage (3) contre les côtés (7 ; 7') de la boîte.

4. Support de colonne de volant de direction selon la revendication 3, caractérisé en ce que la boîte fixe (1) comporte deux groupes de fentes longitudinales (8, 9) ou de rails de guidage (8', 9) dans lesquels le boitier porteur (2 ; 2') ou une pièce fixée à ce dernier peut être déplacé vers l'avant et vers l'arrière et en ce que le moyen d'actionnement par une force (26) destiné au bras de levier (25) est disposé de manière que, lorsqu'il est à l'état normal dans lequel il n'est pas actionné, il écarte à force les éléments cylindriques de blocage (20, 21) l'un de l'autre, ceux-ci étant retenus par le boulon de blocage (22) qui passe par les boutonnières courbes (18) des plaques de blocage (3) et dans un premier groupe (9) de rails de guidage de la boîte (1), de manière à serrer ainsi les plaques de blocage (3) en engagement de blocage les unes contre les autres et contre les côtés (7 ; 7') de la boîte (1).

5. Support de colonne de volant de direction selon les revendications 1 et 2, dans lequel les plaques de blocage (3) sont placées sur les côtés extérieurs (7 ; 7') de la boîte (1), caractérisé en ce que le boulon de blocage (22) des plaques de blocage (3) est fendu en ce que les éléments cylindriques de blocage (20, 21) ainsi que les deux parties du boulon de blocage sont destinés à être serrés les uns contre les autres afin d'obtenir un blocage des plaques (3) contre les côtés (7) de la boîte au moyen d'un levier de traction actionné par une force.

6. Support de colonne de volant de direction selon l'une quelconque des revendications précédentes, caractérisé en ce qu'il comprend deux groupes d'une pluralité de plaques coopérantes de blocage (3) dont chacune comporte une boutonnière allongée de pivotement (18), ainsi qu'une rondelle montée sur le boulon de blocage (22) entre chaque paire desdites plaques coopérantes de blocage (3).

7. Support de colonne de volant de direction selon la revendication 1, caractérisé en ce que le bras de levier (25) agissant sur lesdites deux extrémités allongées et effilées (23, 24) a une section transversale aplatie.

8. Support de colonne de volant de direction selon l'une quelconque des revendications précédentes, caractérisé en ce que le boîtier porteur d'extrémité (2') ainsi que ses plaques de blocage (3) est relié (19') à son extrémité placée n face du volant de direction de manière à pivoter sur une partie intermédiaire centrale (29) qui peut être déplacée longitudinalement dans des rails de guidage (28) disposés sur les côtés intérieurs (7') de la boîte (1) et en ce que le boîtier porteur (2') ainsi que ses plaques de blocage (3) peuvent être bloqués de manière à être empêchés de se déplacer longitudinalement et de subir un pivotement sur le boulon de blocage (22) qui passe à travers les plaques de blocage (3) et dans les éléments cylindriques de blocage (20, 21). (figures 4 - 6).

9. Support de colonne de volant de direction selon la revendication 8, caractérisé en ce qu'un ou plusieurs ressorts d'arrêt (32) sont placés entre la partie centrale intermédiaire (29) et le boîtier porteur (2'), lesdits ressorts d'arrêt (32) étant placés à un niveau inférieur à l'axe de pivotement (19') et étant destinés à empêcher le volant de direction de retomber lorsque le blocage entre les plaques de blocage et la boîte (1) est libéré.

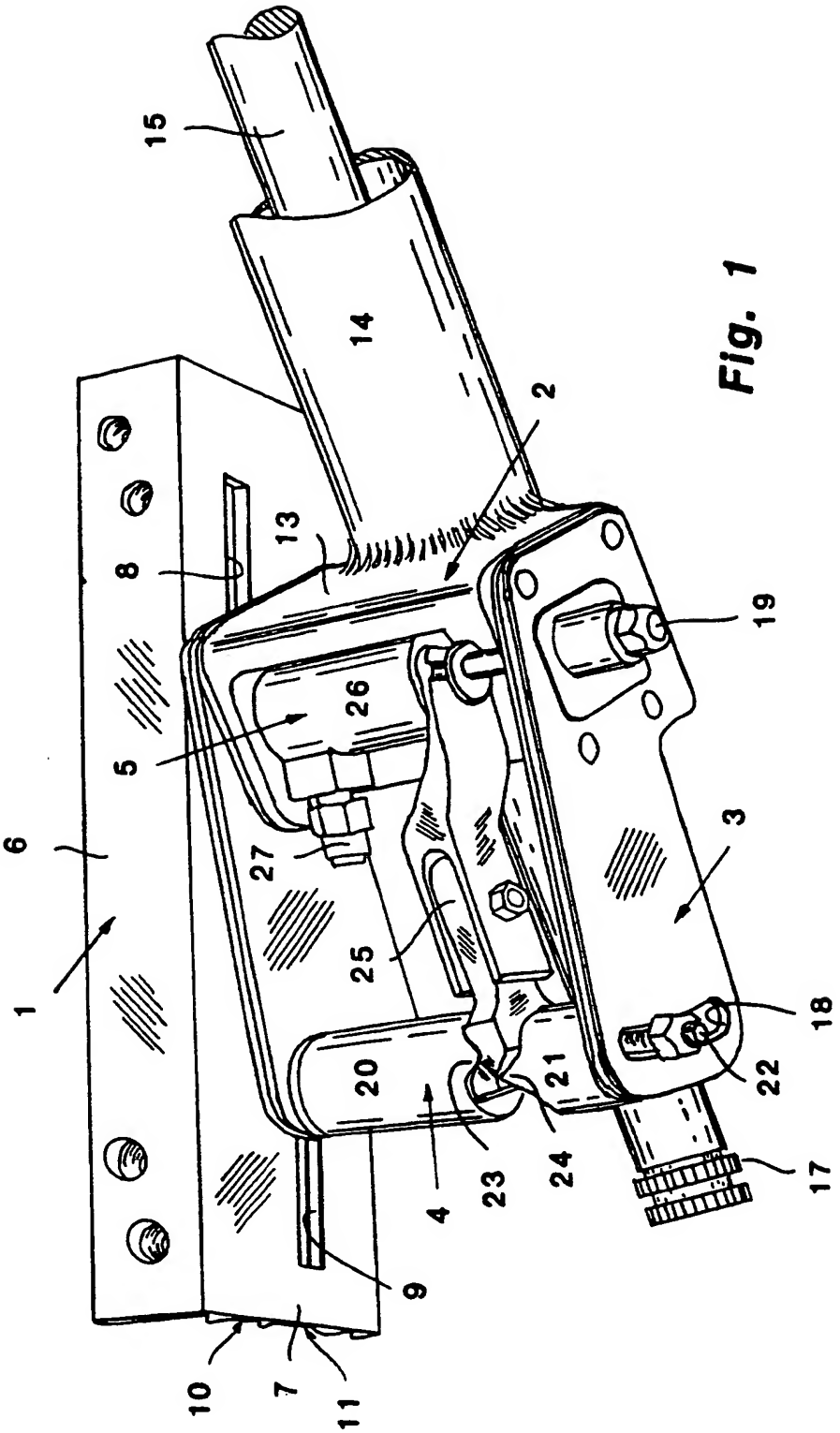

Fig. 1

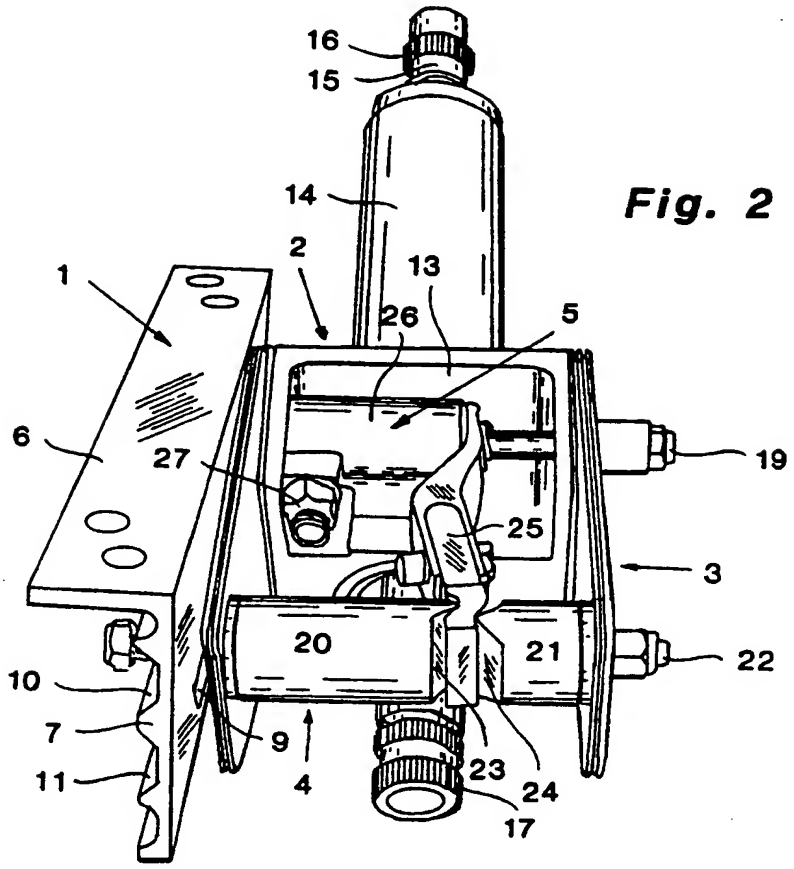
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Fig. 2

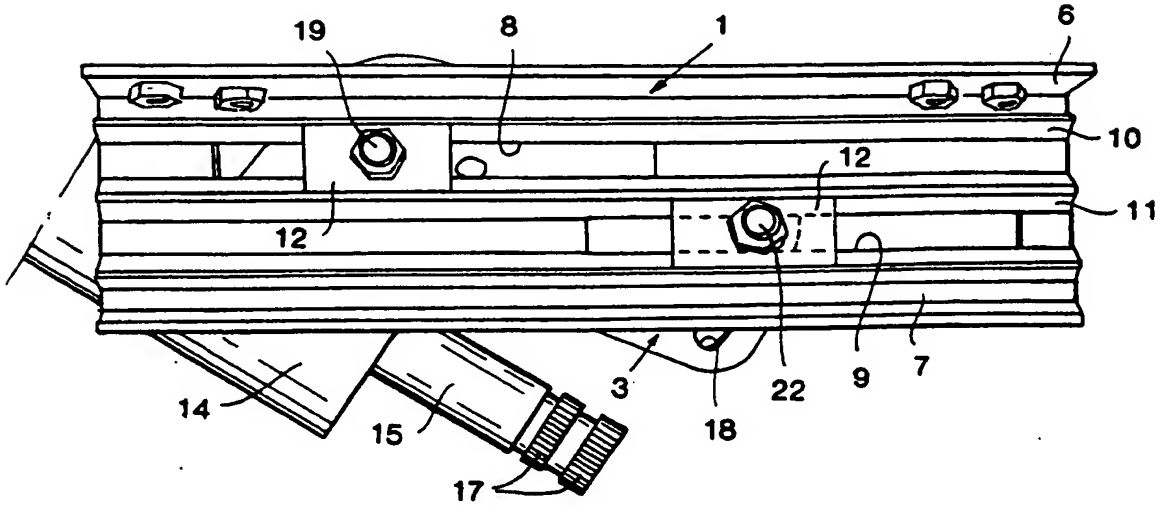
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Fig. 3

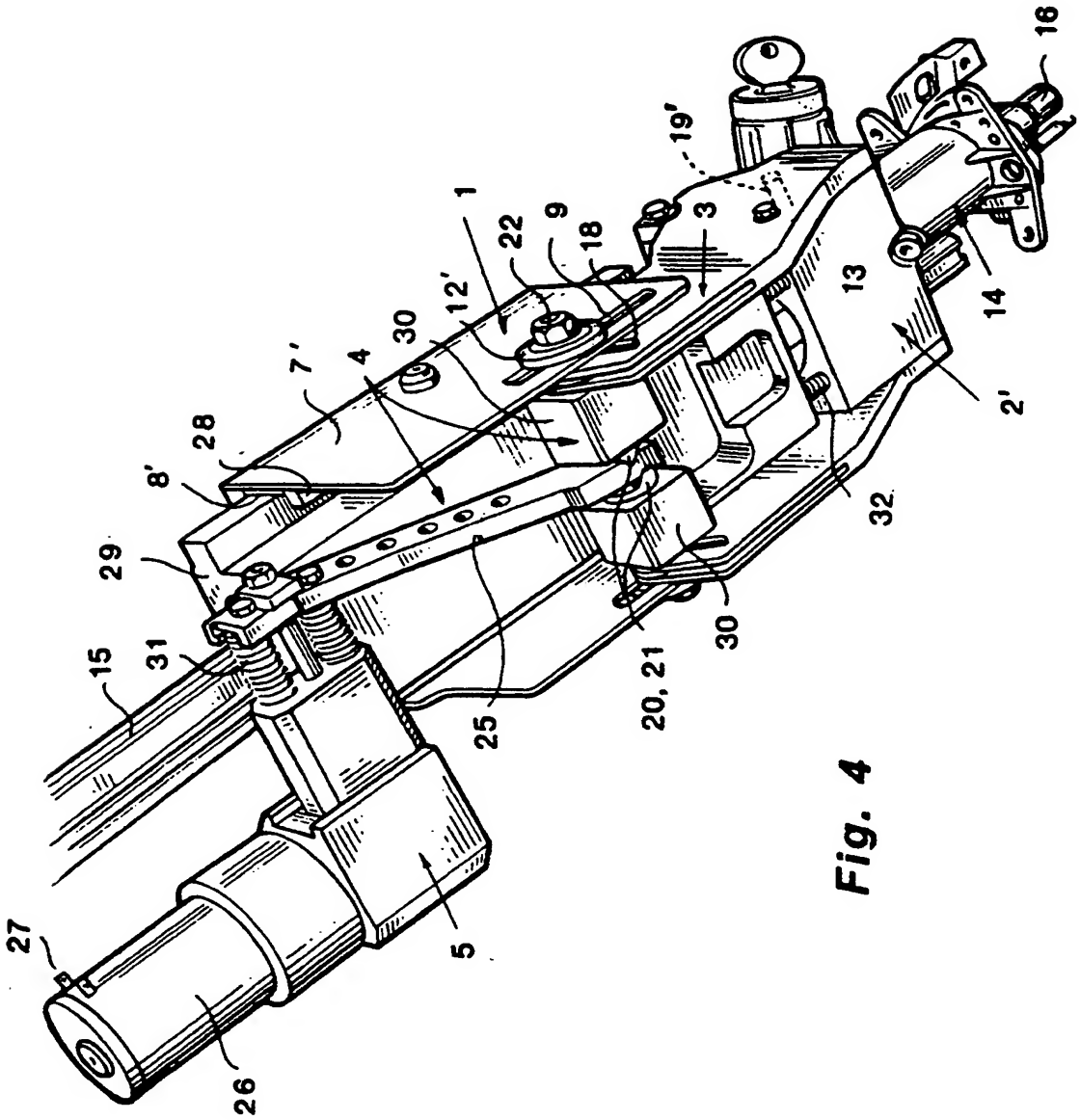

Fig. 4

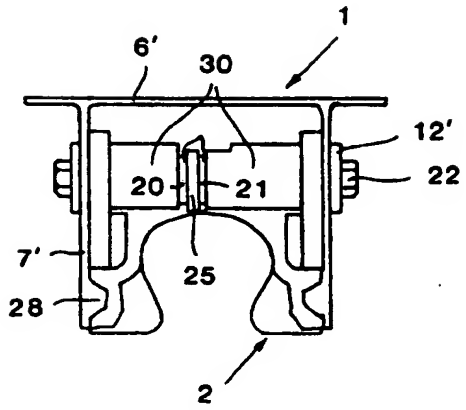

Fig. 5

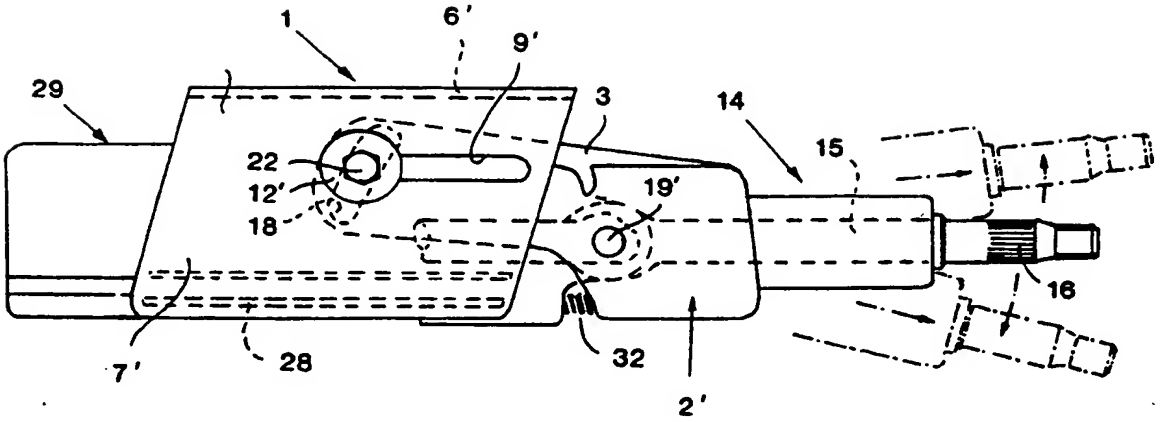

Fig. 6